Appendix I

Glossary

ACCELEROMETER.—An instrument used to measure changes in velocity.

AFTER TRUCK.—The highest part of the aftermast.

AGROUND.—When any part of a ship is resting on the bottom. A ship runs aground or goes aground.

AIR ALMANAC.—A periodical publication of astronomical data, designed primarily for air navigation.

ALTOCUMULUS.—A cloud layer (or patches) within the middle level (mean height 6,500 to 20,000 feet), composed of rather flattened globular masses.

ALTOSTRATUS.—A sheet of gray or bluish clouds within the middle level (mean height 6,500 to 20,000 feet).

ANCHOR BALL.—A black circular shape hoisted to indicate that the ship is anchored.

ANCHORED.—Made fast to the bottom by an anchor.

AYNGLE.—The inclination to each other of two intersecting lines, measured by the arc of a circle intercepted between the two lines forming the angle, the center of the circle being the point of intersection.

APPARENT TIME.—Time based upon the rotation of the earth relative to the apparent (true) Sun.

ARC.—Part of a curved line, as a circle. The graduated scale of an instrument for measuring angles, as a marine sextant.

ATMOSPHERE.—The envelope of air surrounding Earth or other celestial body.

AZIMUTH.—The horizontal direction of a celestial point from a terrestrial point. It is usually measured from 000° at the reference direction clockwise through 360°.

BAROMETER.—An instrument for measuring atmospheric pressure.

BASE LINE.—The line between two transmitters operating together to provide a line of position, as in loran.

BEARING.—The horizontal direction of one terrestrial point from another. It is usually measured from 000° at the reference direction clockwise through 360°.

BEARING CIRCLE.—A ring designed to fit snugly over a compass or compass repeater and provided with vanes for observing compass bearings.

BEARING CURSOR.—A mechanical or electronic bearing line of a plan position indicator type of display for reading the target bearing.

BEARING RESOLUTION.—The minimum angular separation in a horizontal plane between two targets at the same range that will allow an operator to obtain data on either individual target.

BINNACLE.—The stand in which a compass is mounted.

BLAST.—Signal on a ship's whistle; short, about 1 second; prolonged, 4 to 6 seconds.

BLINKING.—Regular shifting right and left of a loran signal to indicate that the signals are out of synchronization.

BROAD COMMAND PENNANT.—Personal command pennant of an officer, not a flag officer.

BUOY.—A floating object, other than a lightship, moored or anchored to the bottom as an aid to navigation.

CELESTIAL EQUATOR.—The intersection of the celestial sphere and extended plane of the equator.

CELESTIAL NAVIGATION.—Navigation with the aid of celestial bodies.

CELESTIAL SPHERE.—An imaginary sphere of infinite radius concentric with Earth on which all celestial bodies except Earth are imagined to be provided.

CELSIUS.—Temperature based upon a scale in which, under standard atmospheric pressure, water freezes at 0° and boils at 100°.

CHART.—A map intended primarily for navigational use.

CHRONOMETER.—A timepiece with a nearly constant rate.

CIRROCUMULUS—High clouds (mean lower level above 20,000 feet), composed of small white flakes or of very small globular masses.

CIRROSTRATUS.—Thin, whitish, high clouds (mean lower level above 20,000 feet).

CIRRUS.—Detached high clouds (mean lower level above 20,000 feet) of delicate and fibrous appearance.

CLOSE ABOARD.—Near; within 600 yards for ship, 400 yards for boat.

CLOSEST POINT OF APPROACH.—The position of a contact when it reaches its minimum range to own ship.

CLOSE UP.-A flag that is all the way up on its halyard.

CLOUD.—A visible assemblage of numerous tiny droplets of water or ice crystals formed by condensation of water vapor in the air with the base above the surface of Earth.

COAST PILOT.—A descriptive book for the use of mariners, containing detailed information about coastal waters, harbor facilities, and so forth, of an area, particularly along the coasts of the United States.

COLORS.—The national flag. The ceremony of raising the flag at 0800 and lowering it at sunset aboard a ship not under way or at a shore station.

COMMISSION PENNANT.—Narrow red, white, and blue pennant with seven stars, flown at the main-truck of a ship in commission.

COMPASS.—An instrument for determining courses steered and bearings by indicating the magnetic or true north and the ship's head.

COMPASS HEADING.—A heading relative to compass north.

COMPASS POINTS.—The 32 divisions of a compass at intervals of 11 1/4°.

COMPUTED ALTITUDE.—Altitude of the center of a celestial body above the celestial horizon at a given time and place as determined by computation, table, mechanical device, or graphics.

CONSOL.—An electronic navigational system providing a number of rotating equisignal zones that permit determination of bearings from a transmitting station by counting a series of dots and dashes and referring to a table or special chart.

CONTOUR.—A line connecting points of equal elevation or equal depth.

CUMULONIMBUS.—A massive cloud with great vertical development, the summits of which rise in the form of mountains or towers, the upper parts often spreading out in the form of an anvil.

CUMULUS.—A dense cloud with vertical development, having a horizontal base and dome-shaped upper surface, exhibiting protuberances.

CURRENT.—Water in essentially horizontal motion. A hypothetical horizontal motion of such set and drift as to account for the difference between a dead-reckoning position and a fix at the same time.

DAY BEACON.—An unlighted beacon.

DEAD RECKONING.—Determination of position by advancing a previous position for courses and distances.

DECCA.—An electronic navigational system by which hyperbolic lines of position are determined by measuring the phase difference of synchronized continuous wave signals.

DECLINATION.—Angular distance north or south of the celestial equator and a point on the celestial sphere, measured northward or southward from the celestial equator through 90°, and labeled N or S to indicate the direction of measurement.

DEGAUSSING.—Neutralization of the strength of the magnetic field of a vessel by means of suitably arranged electric coils permanently installed in the vessel.

DEGREE.—A unit of circular measure equal to 1/360th of a circle.

DEPTH.—Vertical distance from a given water level to the bottom.

DEPTH OF WATER.—The vertical distance from the surface of the water to the bottom.

DEPTH-SOUNDING SONAR.—A direct-reading device for determining the depth of water in fathoms or other units by reflecting sonic or ultrasonic waves from the ocean bottom.

DEVIATION.—The angle between the magnetic meridian and the axis of a compass card expressed in degrees east or west to indicate the direction in which the northern end of the compass card is offset from magnetic north.

DEW POINT.—he temperature to which air must be cooled at constant pressure and constant water vapor content to reach saturation.

DIP.—Lowering a flag part way in salute or in answer and hoisting it again. A flag is "at the dip" when it is flown at about two-thirds the height of the halyards.

DIRECTION OF RELATIVE MOVEMENT.—The direction of motion relative to a reference point, itself usually in motion.

DIURNAL.—Having a period of, occurring in, or related to a day.

DIVIDERS.—An instrument consisting in its simple form of two pointed legs joined by a pivot and used principally for measuring distances or coordinates.

DOPPLER.—The observed change of frequency of a wave caused by a time rate of change of the effective distance traveled by the wave between the source and the point of observation.

DRESSING LINES.—The lines used in dressing ship.

DRESSING SHIP.—A display of national colors at all mastheads and the flagstaff. (Full dressing ship requires, in addition, a rainbow of flags from bow to stem over the mastheads.)

DRIFT.—The leeway of a vessel or amount of set of a tide or current; the spare end of a rope.

EBB.—Tidal current moving away from land or down a tidal stream.

ELECTROMAGNETIC.—Having both magnetic and electric properties.

ELECTRONIC NAVIGATION.—Navigation by means of electronic equipment.

EQUATOR.—The primary great circle of Earth, or a similar body, perpendicular to the polar axis.

ESTIMATED POSITION.—The most probable position of a craft determined from incomplete data or data of questionable accuracy.

FAHRENHEIT TEMPERATURE.—Temperature based upon a scale in which, under standard atmospheric pressure, water freezes at 32° and boils at 212°.

FATHOM.—A unit of length equal to 6 feet.

FIX.—A relatively accurate position determined without reference to any former position.

FLAGHOIST.—A display of flags used to indicate a signal or a group of signals.

FLAGSTAFF.—A small vertical spar at the stem on which the ensign is hoisted.

FLOOD TIDE.—Tide rising or flowing toward land.

FOG.—A visible assemblage of numerous tiny droplets of water or ice crystals formed by condensation of water vapor in the air with the base at the surface of Earth.

FORETRUCK—The highest point of the forward mast.

FRONT.—The intersection of a frontal surface and a horizontal plane.

GAFF.—A small spar abaft the mainmast from which the national ensign is flown when the ship is under way.

GEOGRAPHICAL POSITION.—That point on Earth at which a given celestial body is in the zenith at a specified time. Any position on the earth defined by means of its geographical coordinates.

GNOMONIC PROJECTION.—A map projection in which points on the surface of a sphere or spheroid, such as Earth, are conceived as projected by radials from the center to a tangent plane.

GREAT CIRCLE.—The intersection of a sphere and a plane through its center meridian; angular distance west of the Greenwich celestial meridian; the arc of the celestial equator, or the angle at the celestial pole, between the upper branch of the Greenwich celestial meridian and the hour circle of a point on the celestial sphere, measured westward from the Greenwich celestial meridian through 360°.

GREENWICH HOUR ANGLE.—Local hour angle at the Greenwich Meridian.

GREENWICH MEAN TIME.—Local mean time at the Greenwich Meridian; the arc of the celestial equator, or the angle at the celestial pole, between the lower branch of the Greenwich celestial meridian and the hour circle of the mean sun, measured westward from the lower branch of the Greenwich celestial meridian through 24 hours; Greenwich hour angle of the mean sun, expressed in time units, plus 12 hours.

GROUND WAVE.—That portion of a radio wave in proximity to, and affected by, the ground, being somewhat refracted by the lower atmosphere and diffracted by the surface of Earth.

GUN SALUTE.—Blank shots fired to honor a dignitary or in celebration.

GYROCOMPASS.—A compass having one or more gyroscopes as the directive element and tending to indicate true north.

GYRO REPEATER.—That part of a remote indicating gyrocompass system that repeats at a distance the indications of the master gyrocompass.

HALFMAST.—To fly a flag halfway up the mast as a sign of mourning.

HAUL DOWN.—A term used as directive to execute a flaghoist by lowering it.

HONORS AND CEREMONIES.—A collective term; official guards, bands, salutes, and other activities that honor the colors, celebrate a holiday, or greet a distinguished guest or officer.

HUMIDITY.—The amount of water vapor in the air.

HYPERBOLA.—A curve that is the locus of points having a constant difference of distance from two fixed points.

HYPERBOLIC NAVIGATION SYSTEM.—A method of radio navigation (for example, loran) in which pulses transmitted by two ground stations are received by an aircraft or ship.

INDEX CORRECTION.—That correction due to index error.

INDICATOR.—A device or apparatus, usually partly or wholly automatic, for indicating something.

INERTIAL NAVIGATION SYSTEM (INS).—System designed to guide a ship by a device independent of outside information, using the inertial properties of gyroscopes.

INLAND RULES.—Rules of the nautical road that are applicable in most inland U.S. waters.

INTERNATIONAL RULES.—Rules of the nautical road made effective by agreement of the major maritime powers for use on high seas and most inland waters of the world except the United States.

INTERPOLATION.—The process of finding a value between two known values on a chart or graph.

IONOSPHERE.—That part of Earth's atmosphere between the chemopause (at a height of about 50 miles) and the ionopause (at about 250 miles).

ISOBARS.—Lines connecting points having the same atmospheric pressure reduced to a common datum, usually sea level.

JOOD.—Junior officer of the deck. The assistant to the officer of the deck.

KNOT.—The unit of speed that is equivalent to 1 nautical mile (6,080 feet per hour); a collective term for hitches and bends.

LATITUDE.—Distance north (N) or south (S) of the equator, expressed in degrees and minutes.

LIGHT CHARACTERISTICS.—The sequence and length of light and dark periods and the color or colors by which it is identified.

LIGHTHOUSE.—A distinctive structure exhibiting a major light designed to serve as an aid to navigation.

LIGHT LIST.—A publication tabulating navigational lights, with their locations, candlepowers, characteristics, and so forth.

LIGHTSHIP.—A distinctively marked vessel anchored or moored at a charted point to serve as an aid to navigation.

LINE OF POSITION (LOP).—A line indicating a series of possible positions of a ship as a result of observation or measurement.

LIST OF LIGHTS.—A publication containing a description of every light in the world not located in the United States or its possessions.

LOCAL APPARENT NOON.—The instant at which the apparent (true) sun is over the upper branch of the local meridian.

LOCAL HOUR ANGLE.—Angular distance west of the local celestial meridian; the arc of the celestial equator or the angle at the celestial pole between the upper branch of the local celestial meridian and the hour circle of a point on the celestial sphere, measured westward from the local celestial meridian through 360°.

LOCAL MEAN TIME.—The arc of the celestial equator or the angle at the celestial pole between the lower branch of the local celestial meridian and the hour circle of the mean sun, measured westward from the lower branch of the local celestial meridian through 24 hours; local hour angle of the mean sun, expressed in time units, plus 12 hours.

LOCUS.—All possible positions of a point or curve satisfying stated conditions.

LONGITUDE.—Distance east (E) or west (W) of the prime meridian, which runs through Greenwich, England.

LOOKOUT.—A man stationed as a visual watch.

LORAN.—An electronic navigational system by which hyperbolic lines of position are determined by measuring the difference in the time of reception of synchronized pulse signals from two fixed transmitters.

LUBBER'S LINE.—A reference line on any direction-indicating instrument, marking the reading that coincides with the heading.

LUNAR TIME.—Time based upon the rotation of Earth relative to the Moon.

MAINMAST.—Second mast aft from the bow.

MAIN-TRUCK.—The highest part of the mainmast.

MANEUVERING BOARD.—A polar coordinate plotting sheet devised to facilitate the solution of problems involving relative movement.

MANEUVERING SHIP.—A ship the movements of which are defined relative to a given ship called the reference ship.

MASTER STATION.—The governing of two or more synchronized transmitting stations.

MASTHEAD.—The top of a mast.

MEAN TIME.—Time based upon the rotation of Earth relative to the mean Sun.

MERCATOR PROJECTION.—A conformal cylindrical map projection in which the surface of a sphere or spheroid, such as Earth, is conceived as developed on a cylinder tangent along the equator.

MERIDIAN.—A north-south reference line, particularly a great circle through the geographic poles of Earth.

MESSAGE.—Any thought briefly stated in plain or secret language in a form suitable for rapid transmission.

METER.—The basic unit of length of the metric system, equal to the distance at 0°C between two lines on a standard platinum-iridium bar.

MICROSECOND.—One-millionth of a second.

MILLIBARS.—A unit of measure of atmospheric pressure.

MINUTE.—The sixtieth part of a degree of arc.

MODULATOR.—That part of radio equipment that alters the amplitude, frequency, or phase of a radio signal in accordance with speech or a signal, or that regulates the length of a pulse.

MORSE CODE.—Dots and dashes used in communications in place of letters, numerals, and punctuation.

MRM.—Distance of relative movement. The distance along the relative movement line between any two specified points or time.

NAUTICAL ALMANAC.—A periodical publication of astronomical statistics useful to, and designed primarily for, marine navigation, particularly the American Nautical Almanac published by the U.S. Naval Observatory.

NAUTICAL ASTRONOMY.—Navigational astronomy.

NAUTICAL MILE.—A unit of distance used principally in navigation. See Knot.

NAVIGATION.—The process of directing the movement of a craft from one point to another.

NEAP TIDES.—The tides occurring near the times of first and last quarter of the moon when the range of tide tends to decrease.

NIMBOSTRATUS.—A dark, low, shapeless cloud layer (mean upper level below 6,500 feet), usually nearly uniform; the typical rain cloud.

NOMOGRAM.—A diagram showing to scale the relationship between several variables in such a manner that the value of one that corresponds to known values of the others can be determined graphically.

NOT UNDER COMMAND.—A ship disabled or uncontrollable.

OFFICIAL VISIT.—A formal visit of courtesy requiring special honors and ceremonies.

OMEGA.—An electronic navigational system.

OSCILLOSCOPE.—An instrument for producing a visual representation of oscillations or changes in an electric current.

PARALLAX.—The difference in the apparent direction or position of an object when viewed from different points.

PARALLEL.—A circle on the surface of Earth parallel to the plane of the equator and connecting all points of equal latitude; a circle parallel to the primary great circle of a sphere or spheroid.

PASSING HONORS.—Honors, except gun salutes, that are rendered by a ship when ships or embarked officials or officers pass close aboard.

PEAK.—The topmost end of the gaff from which the ensign is flown while a ship is under way.

PELORUS.—A dumb compass, or a compass card (called a pelorus card) without a directive element, suitably mounted and provided with vanes to permit observation of relative bearings, unless used in conjunction with a compass, to give true or magnetic bearings.

PHONETIC ALPHABET.— A system of words that represents each letter of the alphabet.

PILOTING.—Navigation involving frequent or continuous determination of position or a line of position relative to geographical points to a high order of accuracy.

PIPE THE SIDE.—A ceremony conducted at the brow of a ship in which sideboys are paraded and the boatswain's pipe is blown.

PLAN POSITION INDICATOR.—A radarscope that has a sweep that originates in the center and moves to the outer edge of the scope and presents an overflow of a given area.

PLOTTING SHEET.—A blank chart, usually on the Mercator projection, showing only the graticule and a compass rose so the plotting sheet can be used for any longitude.

POLAR DISTANCE.—Angular distance from a celestial pole.

POSITION.—A point defined by stated or implied coordinates, particularly one on the surface of Earth.

PRESSURE.—Force per unit area. The pressure exerted by the weight of Earth's atmosphere is called atmospheric or, if indicated by a barometer, barometric pressure.

PROLONGED BLAST.—A blast on the whistle of from 4 to 6 seconds duration.

PROPAGATION.—A transmission of electromagnetic energy.

PRO WORD.—Pronounceable words or phrases that have been assigned meanings for expediting message handling on radio circuits where procedure is used.

PSYCHROMETER.—A type of hygrometer (an instrument for determining atmospheric humidity) consisting essentially of dry-bulb and wet-bulb thermometers.

PULSE-REPETITION RATE.—The rate at which recurrent pulses are transmitted, usually expressed in pulses per second.

QUARTERDECK.—The portion of the weather deck designated by the commanding officer for official ceremonies.

RADAR.—(RAdio Detection And Ranging) is a method of determining the distance to and direction of objects by sending out a beam of microwave radio energy and detecting the returned reflections.

RANGE.—Two or more objects in line.

RANGE MARKER.—A distance marker, as on a radar PPI.

RANGE STROBE.—An electronic range marker on a radar PPI.

RECIPROCAL.—A direction 180° from a given direction.

REFERENCE SHIP.—A ship to which relative movement of other ship is referred.

REFRACTION.—The change in direction of motion of a ray of radiant energy as it passes obliquely from one medium into another in which the speed of propagation is different.

RELATIVE BEARING.—Bearing relative to heading or to the ship.

RELATIVE MOTION.—Apparent motion; relative movement.

RELATIVE MOVEMENT LINE.—A line connecting successive positions of a maneuvering ship relative to a reference ship.

RELATIVE PLOT.—A plot of the successive positions of a ship relative to a reference point, which is usually in motion.

ROOT MEAN SQUARE.—The square root of the arithmetical mean of the squares of a group of numbers.

RUNNING FIX.—A position determined by crossing lines of position obtained at different times and advanced or retired to a common time.

SAILING DIRECTIONS.—A descriptive book for the use of mariners, containing detailed information of coastal waters, harbor facilities, and so forth, of an area.

SCALE.—The ratio between the linear dimensions of a chart, map, drawing, and so forth, and the actual dimensions represented.

SEMIDIAMETER.—The radius of a closed figure. Half the angle at the observer subtended by the visible disk of a celestial body.

SET.—The direction toward which a current flows.

SEXTANT.—A double-reflecting instrument for measuring angles, primarily altitudes of celestial bodies.

SHORAN.—A precision electronic position fixing system using a pulse transmitter and receiver and two transponder beacons at fixed points.

SIDEREAL HOUR ANGLE.—Angular distance west of the vernal equinox; the arc of the celestial equator or the angle at the celestial pole between the hour circle of the vernal equinox and the hour circle of a point on the celestial sphere, measured westward from the hour circle of the vernal equinox through 360°.

SIDEREAL TIME.—Time based upon the rotation of Earth relative to the vernal equinox.

SKY WAVE.—An indirect radio wave that travels from the transmitting antenna into the sky, where the ionosphere bends it back toward the Earth.

SLACK WATER.—The condition when the speed of a tidal current is zero, especially the momentary condition zero speed when a reversing current changes direction.

SOLAR TIME.—Time based upon the rotation of Earth relative to the Sun.

SOUNDING.—Measured or charted depth of water or the measurement of such depth.

SPEED OF RELATIVE MOVEMENT.—Speed relative to a reference point itself usually in motion.

SPRING TIDES.—The tides occurring near the times of full moon and new moon when the range of tide tends to increase.

STADIMETER.—An instrument for determining the distance to an object of known height by measuring the angle subtended at the observer by the object.

STAND.—The condition at high or low tide when there is no change in the height of the water.

STAR FINDER.—A device to facilitate the identification of stars.

STATUTE MILE.—A unit of distance equal to 5,280 feet.

STRATOCUMULUS.—Low clouds (mean upper level below 6,550 feet), composed of a layer or patches of globular masses or rolls.

STRATUS.—A low cloud (mean upper level below 6,550 feet) in a uniform layer.

TANGENT.—The ratio of the side opposite an acute angle of a plane right triangle to the shorter side adjacent to the same angle. A straight line, curve, or surface touching a curve or surface at one point.

TELESCOPIC ALIDADE.—A device used with a gyro repeater for taking bearings.

TEMPERATURE.—Intensity or degree of heat. Fahrenheit temperature is based upon a scale in which water freezes at 32° and boils at 212°.

TERRESTRIAL SPHERE.—The Earth.

THERMOMETER.—An instrument for measuring temperature.

THREE-ARM PROTRACTOR.—An instrument consisting essentially of a circle graduated in degrees to which is attached one fixed arm and two arms pivoted at the center and provided with clamps so they can be set at any angle to the fixed arm within the limits of the instrument.

TIDE.—The periodic rise and fall of the surface of oceans, bays, and so forth, due principally to the gravitational attraction of the Moon and Sun for the rotating Earth.

TIME DIAGRAM.—A diagram in which the celestial equator appears as a circle and celestial meridians and hour circles as radial lines, used to facilitate solution of time problems and others involving arcs of the celestial equator or angles at the pole by indicating relations between various quantities involved.

TRACK.—To follow the movements of an object, as by radar or an optical system.

TRANSMITTER.—One who or that which transmits or sends anything, particularly a radio transmitter.

TROPICAL CYCLONE.—A violent cyclone originating in the tropics.

TWILIGHT.—The periods of incomplete darkness following sunset (evening twilight) or preceding sunrise (morning twilight).

UNION JACK.—Flag flown at the bow of a ship moored or anchored, consisting of the union of the national flag. Also flown in the boat of a high official and at a yardarm during a general court-martial or court of inquiry.

UPPER BRANCH.—That half of a meridian or celestial meridian from pole to pole that passes through a place or its zenith.

VARIATION.—The angle between the magnetic and geographical meridians at any place, expressed in degrees east or west to indicate the direction of magnetic north from true north.

VECTOR.—A straight line representing both direction and magnitude.

VECTOR DIAGRAM.—A diagram of more than one vector drawn to the same scale and reference direction and in correct position relative to each other.

VERNAL EQUINOX.—That point of intersection of the elliptical and the celestial equator occupied by the Sun as it changes from south to north declination on or about March 21.

VISIBILITY.—The extreme horizontal distance at which prominent objects can be seen and identified by the unaided eye.

VOICE RADIO.—Electronic communications equipment that transmits the speaker's voice through the air on radio waves to an appropriately tuned receiver.

WAVELENGTH.—The distance in the direction of advance between the same phase of successive waves.

WEATHER.—The state of the atmosphere as defined by various meteorological elements, such as temperature, pressure, wind speed, direction, humidity, cloudiness, and precipitation.

WIND.—Moving air, especially a mass of air having a common direction of motion.

YARDARM—The port or starboard half of a spar set athwartships across the upper part of a mast.

ZONE TIME.—The local mean time of a reference or zone meridian whose time is kept throughout a designated zone.

Appendix II

Reference List

Note: Although the following references were current when this TRAMAN was published, their continued currency cannot be assured. Therefore, you need to be sure that you are studying from the latest version.

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